

Data Structures

Practical 6

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Objective:

WAP to implement Stack data structure using Array.
Instruction: Submit in PDF format.

Code:

```
#include <iostream>

using namespace std;

int stack[10], n=10, top;

void initialize(){
    top=-1;
    cout<<"Stack is initialized"<<endl;
}

void overflow(){
    if(top>n-1){
        cout<<"Stack Overflow"<<endl;
    }
    else{
        cout<<"Stack is not full"<<endl;
    }
}
```

```
void underflow(){
if(top<=-1){
cout<<"Stack Underflow"<<endl;
}
else{
cout<<"Stack is not empty"<<endl;
}
}

void push(int val) {

if(top>=n-1)
cout<<"Stack Overflow"<<endl;
else {
top++;
stack[top]=val;
}
}

void pop() {
if(top<=-1)
cout<<"Stack Underflow"<<endl;
else {
cout<<"The popped element is "<< stack[top] <<endl;
top--;
}
}

void display() {
if(top>=0) {
cout<<"Stack elements are:"<<endl;
for(int i=top; i>=0; i--)
```

```
cout<<stack[i]<<endl;
cout<<endl;
} else
cout<<"Stack is empty"<<endl;
}

int main() {
int ch, val;

cout<<"1) Initialize Stack"<<endl;
cout<<"2) Underflow check"<<endl;
cout<<"3) Overflow check"<<endl;

cout<<"4) Push in stack"<<endl;
cout<<"5) Pop from stack"<<endl;
cout<<"6) Display stack"<<endl;
cout<<"7) Exit"<<endl;
do {
cout<<"Enter choice: ";

cin>>ch;

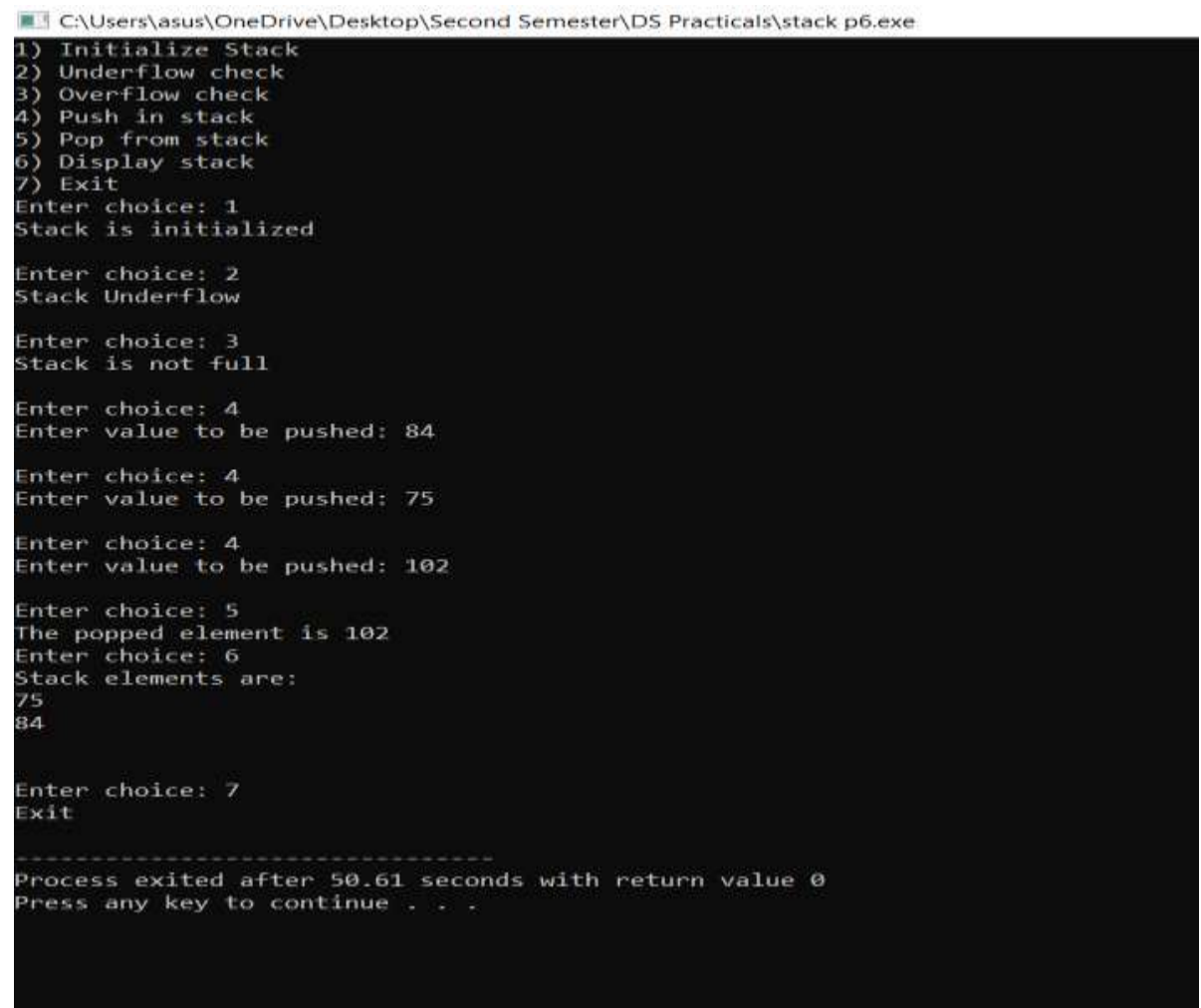
switch(ch) {
case 1:{
initialize();
cout<<endl;
break;
}
case 2:{
underflow();
cout<<endl;
break;
}
```

```
case 3:{
overflow();
cout<<endl;
break;
}
case 4: {
cout<<"Enter value to be pushed: ";
cin>>val;
push(val);
cout<<endl;
break;

}
case 5: {
pop();
break;
cout<<endl;
}
case 6: {
display();
cout<<endl;
break;
}
case 7: {
cout<<"Exit"<<endl;
break;
}
default: {
cout<<"Invalid Choice"<<endl;
```

```
}  
}  
}while(ch!=7);  
return 0;  
}
```

Output:



C:\Users\asus\OneDrive\Desktop\Second Semester\DS Practicals\stack p6.exe

```
1) Initialize Stack  
2) Underflow check  
3) Overflow check  
4) Push in stack  
5) Pop from stack  
6) Display stack  
7) Exit  
Enter choice: 1  
Stack is initialized  
  
Enter choice: 2  
Stack Underflow  
  
Enter choice: 3  
Stack is not full  
  
Enter choice: 4  
Enter value to be pushed: 84  
  
Enter choice: 4  
Enter value to be pushed: 75  
  
Enter choice: 4  
Enter value to be pushed: 102  
  
Enter choice: 5  
The popped element is 102  
Enter choice: 6  
Stack elements are:  
75  
84  
  
Enter choice: 7  
Exit  
  
-----  
Process exited after 50.61 seconds with return value 0  
Press any key to continue . . .
```

